Public Review Draft

Best Management Practices ("BMPs") for Gardening at Remediated M.G.L. Chapter 21E Disposal Sites

Why Should Gardening Best Management Practices Be Used?

It is common for properties in Massachusetts to have measurable levels – usually low levels – of contaminants such as lead or petroleum hydrocarbons in soil. Even residential properties that have been cleaned up to meet the Massachusetts Department of Environmental Protection's soil standards may still contain residual levels of contaminants. Since gardening is one way people come into direct contact with soil, residents who wish to further reduce any exposure they may have to these materials can take the simple steps described in below. These recommendations are designed to be consistent with national guidance on urban gardening and reflect a consensus among gardening experts on measures that can effectively reduce additional exposure to common contaminants.

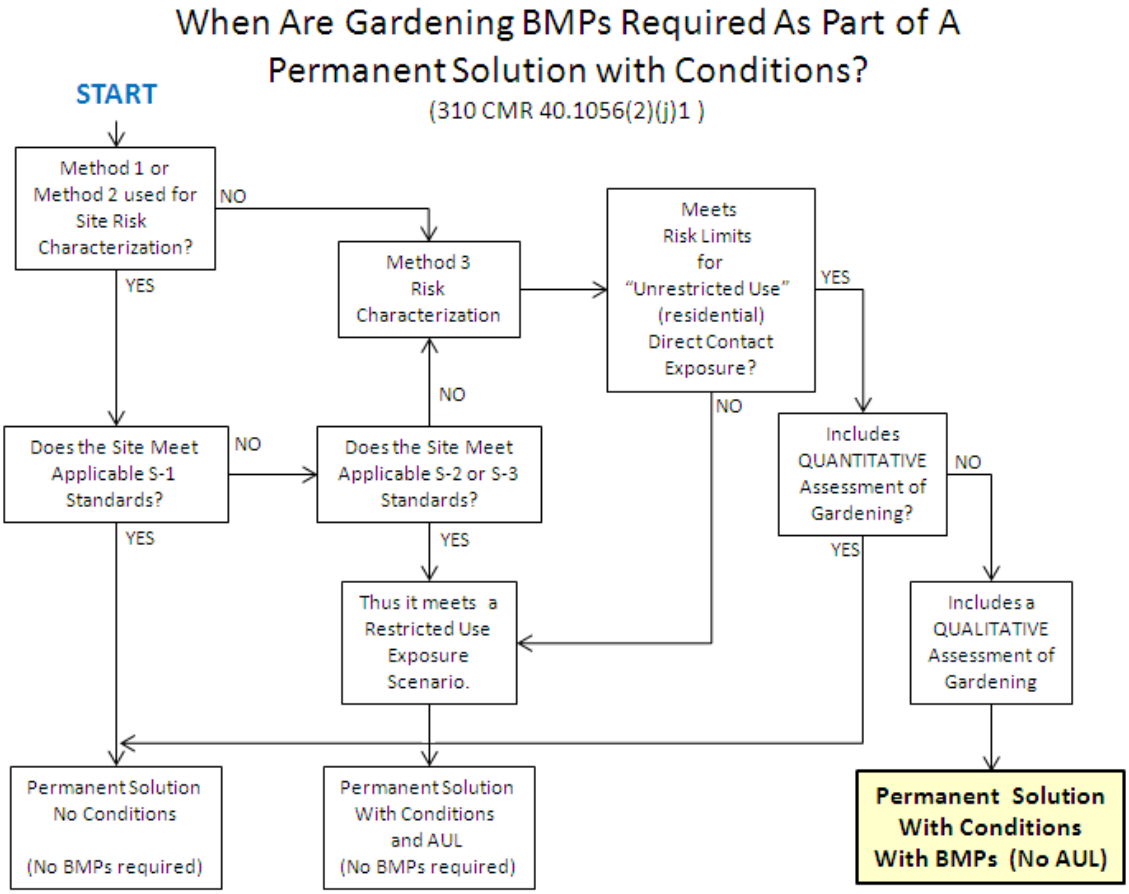
In a residential setting, yards and gardens are areas where people are most likely to have increased direct and indirect contact with soils. Alternatives to traditional gardening, such as container gardening and raised garden beds, are possible, and may reduce plant contact with contaminants, allowing you to work safely in your fruit or vegetable garden, and making produce safe for you and your family.

These practices work by isolating one's garden from any contamination remaining in the soil by means of impermeable barriers. Container gardening utilizes containers, such as pots or even old bath tubs, to keep clean soil used in gardening from contaminated soils that may be present in the rest of the yard. Raised garden beds are constructed by laying down concrete or plastic sheeting, building a wooden perimeter, and then adding clean soil within the holding unit, on top of the soil barrier.

Purpose: The attached Best Management Practices describe optional steps potential gardeners may take to further reduce their exposure to levels of oil or hazardous material that may remain at a M.G.L. Chapter 21E disposal site after a Permanent Solution has been achieved. These or similar BMPs must be included in the site's Permanent Solution Statement.

Applicability: The Gardening BMPs requirement is applicable to disposal sites that are demonstrated to pose No Significant Risk of Harm to Health using a Method 3 Risk Characterization that includes:

(a) the assumption of unrestricted use (including residential use) of the property,
(b) a quantitative assessment of direct contact exposures (ingestion, dermal contact and inhalation) to soil, and
(c) a qualitative assessment of incremental exposures associated with gardening activities.



Authority: The recommendation of Gardening Best Management Practices is a requirement of a Permanent Solution with Conditions pursuant to:

- 310 CMR 40.1056(2)(j)1 (Content of Permanent Solution Statements);
- 310 CMR 40.1041(2)(c)2. (Categories of Permanent Solutions);
- 310 CMR 40.40.1013 (Limitations, Assumptions and Conditions on Site Activities and Uses That Do Not Require an AUL); and
- 310 CMR 40.0923(3)(c) (Identification of Site Activity and Uses).

Best Management Practices for Gardening at Remediated M.G.L. Chapter 21E Disposal Sites

This property is part of a M.G.L. Chapter 21E disposal site that has been assessed and determined to meet the requirements of a Permanent Solution with Conditions under the Massachusetts Contingency Plan (310 CMR 40.0000), where the Conditions include the recommendation of Best Management Practices ("BMPs") for gardening to reduce the potential risks from exposure to contamination that remains on the site.

While the property has been determined to be safe for unrestricted use, including residential use, there are residual levels of contaminants remaining in the soil. Gardeners should consider implementing BMPs to further reduce potential exposure to material in the soil, regardless of the contaminant levels remaining. Implementing BMPs such as those suggested below will allow safer gardening in a wider range of site conditions. Not every BMP is necessary for every single site, but a combination of BMPs appropriate for your particular site will help reduce the potential for additional exposure.

Construct physical controls

Actions to reduce contaminant levels (such as amending the soil) and minimize contact (covering the soil) will further reduce potential risks. Many good gardening practices, like adding compost and soil amendments, improve the soil while reducing the amount of contaminants and exposure to them.

- Build your garden away from areas known or suspected to be contaminated. Sources of contamination can include painted structures (particularly older buildings that may have been painted with lead paint), roads and rail lines.
- Build a hedge or fence to reduce windblown contamination from mobile sources and busy streets.
- Cover existing soil and walkways with mulch, landscape fabric, stones, or bricks.
- Use mulch in your garden beds to reduce dust and soil splash back, reduce weed establishment, regulate soil temperature and moisture, and add organic matter.
- Use soil amendments (such as lime) to maintain neutral pH and add organic matter to improve soil structure.
    - Not all amendments are the same; be sure to choose the right amendments for your soil - amendments that improve conditions at one garden may not work well in others.
    - Keep in mind that each amendment type will have different application rates and techniques (e.g. rototilling), and may need to be maintained and reapplied annually.
    - Be sure to work with your local or state regulatory agency, and ask if your municipality provides free compost or mulch. Some amendments, such as Class A biosolids from sewage sludge, may be regulated under various regulatory programs.

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- Add topsoil or clean fill to ensure the soil is safe for handling by children or gardeners of all ages and for food production.
- Build raised beds or container gardens
  - Raised beds help improve water drainage in heavy clay soils or low-lying areas. They also create accessible gardening locations for many users and allow for more precise soil management.
  - Foot traffic should not be necessary in the bed, so the soil does not become compacted and soil preparation in the coming years is minimized.
  - Place a water permeable fabric cover or geotextile as the bottom layer of your raised bed to further reduce exposure to soils of concern.
  - Raised beds can be made by simply mounding soil into windrows or by building containers.
  - Sided beds can be made from wood, synthetic wood, stone, concrete block, brick or naturally rot-resistant woods such as cedar and redwood. Avoid using chemical-treated lumber for the raised bed because chemicals used in the treated wood could make their way into the soils and plants.

Minimize Ongoing Contact with Soil

Actions to further reduce contact with soil during and after gardening activities can also minimize potential risks from any contaminants remaining in the soil.

- Do not use plants grown in contaminated soil for compost.
- Work in the garden when soil is moist or damp to minimize creation of dust.
- Wear gloves, long sleeves and pants while gardening to prevent skin exposure;
- Wash hands after gardening.
- Wash all vegetables thoroughly.
- Remove gardening shoes and garments before entering the home, and wash gardening clothes separately from other clothing.

For More Information

These recommended Best Management Practices are consistent with federal, state and local guidance on urban gardening in general. MassDEP has additional information available online at: http://www.mass.gov/eea/agencies/massdep/cleanup/regulations/site-cleanup-policies-guidance.html.